

## **Do microbial mutualists alter the invasibility of dune plant communities?**

Dr. Sarah Emery, Michigan State University and Rice University  
(emerysa1@msu.edu)

Dr. Jennifer Rudgers, Rice University  
(jrudgers@rice.edu)

Funding provided by a National Parks Ecological Research Fellowship

### *Proposed methods for research in Sleeping Bear Dunes National Lakeshore, Summer 2006:*

After talks with Steve Yanco (SBDNL), we identified four dune restoration areas at Sleeping Bear Dunes National Lakeshore to sample, paired with four nearby natural dune areas: (Glen Haven Cannery, Empire Bluffs, Mouth of Platt River, N Bar Lake), as well as one future restoration site (Good Harbor Bay). Exact sample locations will be recorded using GPS equipment.

1. To survey *Ammophila* populations in each area for endophyte (EF) infection, 50 tillers will be harvested at random from each population and scored using commercial immunoblot kits (Agrinostics Ltd. Co., Watkinsville GA).
2. Soil mycorrhizal (AMF) communities will be surveyed by taking 10 soil cores (1.5cm diameter x 20cm deep) or small (<5g) root samples from each population, combining cores to create a composite sample for each site. From composite samples, AMF spore diversity and root colonization will be determined in the lab (following INVAM methods, Morton et al. 1993, Bever 2002).
3. To relate AMF and EF abundance to plant invasibility in these sites, I will assess plant community composition (including all native and non-native plant species) using temporary transects through the native and restored dune communities. Relative cover of individual species will be recorded at a minimum of 10 points along five 20m transects in each community. No plants will be harvested or destroyed.
4. Insect communities in each area will be assessed by taking 2 20m sweepnet samples from each site. Insects will be killed using Ethyl Acetate and brought back to lab for identification.